

REMARKS

The present application was filed on September 23, 2003 with claims 1-21. Claims 1, 11 and 21 have been amended. Claims 1-4, 7-14 and 17-21 are pending and claims 1, 11, and 21 are the pending independent claims.

In the outstanding Office Action dated February 27, 2007, the Examiner: (i) rejected claims 1-3, 7-13, and 17-21 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,890,150 to Ushijima et al. (hereinafter “Ushijima”) in view of U.S. Patent No. 6,519,604 to Acharya et al. (hereinafter “Acharya”); and (ii) rejected claims 4 and 14 under 35 U.S.C. §103(a) as being unpatentable over Ushijima in view Acharya and U.S. Patent Application Publication No. 2003/0167259 to Casson et al. (hereinafter “Casson”).

With regard to the rejection of claims 1-3, 7-13 and 17-21 under 35 U.S.C. §103(a) as being unpatentable over Ushijima in view of Acharya, Applicants respectfully assert that, the cited combination fails to establish a prima facie case of obviousness under 35 U.S.C. §103(a), as specified in M.P.E.P. §2143, in that the cited combination fails to teach or suggest all the claim limitations of the amended independent claims. For at least this reason, a prima facie case of obviousness has not been established.

Amended independent claim 1 recites a method of rewriting a query during a database query processing operation. The query, having one or more target attributes, is processed in accordance with at least a portion of the data set, producing query results. The query results are analyzed with respect to the one or more target attributes and one or more auxiliary attributes to determine a relative selectivity for each of the one or more target attributes and the one or more auxiliary attributes. The one or more auxiliary attributes were not included in the query. The query is appended with at least one new predicate that corresponds to at least one of the one or more auxiliary attributes having a high relative selectivity to form a rewritten query. Amended independent claim 11 recites an apparatus having similar limitations. Amended independent claim 21 recites an article of manufacture having similar limitations.

The Examiner argues that Ushijima teaches the steps of processing the query having one or more target attributes in accordance with at least a portion of a data set producing query results; and

analyzing the one or more target attributes and one or more auxiliary attributes from the query results. Ushijima utilizes a method in which random sampling is introduced in query processing, and feature quantity and regularity are estimated from the randomly sampled data to reduce the data quantity to be processed. See Ushijima, col. 1, lines 51-55. Ushijima processes a query with a random sampling component. After query results are obtained, the query result is evaluated according to a query result evaluation criterion that was generated when the query was first processed, in order to determine whether to continue the database search. See Ushijima, col. 6, lines 20-24.

Ushijima fails to disclose the analysis of query results with respect to target or auxiliary attributes. Ushijima compares the query result to a query result evaluation criterion, and provides no in-depth analysis of the query result attributes. Therefore, Ushijima fails to disclose the analysis of query results with respect to one or more target attributes and one or more auxiliary attributes, as recited in independent claims 1, 11 and 21. Further, Ushijima fails to disclose that an analysis of such attributes results in a determination of a relative selectivity for each of the one or more target attributes and the one or more auxiliary attributes.

The Examiner further argues that Acharya discloses the step of appending the query to form a rewritten query. Applicants respectfully disagree. Acharya's method of appending queries requires the use of pre-processed database information. Acharya, col. 11, lines 14-17 and 24-36. Acharya's invention relies on database statistical summaries for probabilistic error/confidence bounds. These probabilistic error/confidence bounds are appended into the database queries, inputted by the user. The rewritten queries are then used for database processing. Acharya fails to disclose the appending of the query with at least one new predicate corresponding to at least one of the one or more auxiliary attributes having a high relative selectivity, as recited in independent claims 1, 11 and 21. Acharya makes no mention of adding new predicates corresponding to auxiliary attributes.

For at least the reasons presented above, the combined teaching of Ushijima and Acharya does not result in Applicants' invention as recited in the amended independent claims. Further, Applicants' invention as recited in the amended independent claims is not obvious in view of the combined teaching of Ushijima and Acharya.

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Dependent claims 2-3, 7-10, 12-13 and 17-20 are patentable at least by virtue of their dependency from claims 1 and 11, and also recite patentable subject matter in their own right. Accordingly, withdrawal of the §103(a) rejection of claims 1-3, 7-13 and 17-21 is respectfully requested.

With regard to the rejection of claims 4 and 14 under 35 U.S.C. §103(a) as being unpatentable over Ushijima in view of Acharya and Casson, Applicants respectfully reassert that the cited combination fails to teach or suggest all the claim limitations, as stated above. Applicants assert that although Casson mentions sampling databases every Nth record, Casson fails to remedy the deficiencies of Ushijima and Acharya described above with respect to the independent claims. Therefore, the combination of Ushijima, Acharya and Casson fails to disclose the analysis of target attributes and auxiliary attributes, as well as the appending of a query with at least one new predicate that corresponds to an auxiliary attribute. Accordingly, due to the dependence of claims 4 and 14 on independent claims 1 and 11 respectively, and because claims 4 and 14 recite patentable subject matter in their own right, withdrawal of the §103(a) rejection of claims 4 and 14 is respectfully requested.

In view of the above, Applicants believe that claims 1-4, 7-14 and 17-21 are in condition for allowance, and respectfully request withdrawal of the §103(a) rejections.

Respectfully submitted,



Robert W. Griffith
Attorney for Applicant(s)
Reg. No. 48,956
Ryan, Mason & Lewis, LLP
90 Forest Avenue
Locust Valley, NY 11560
(516) 759-4547

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